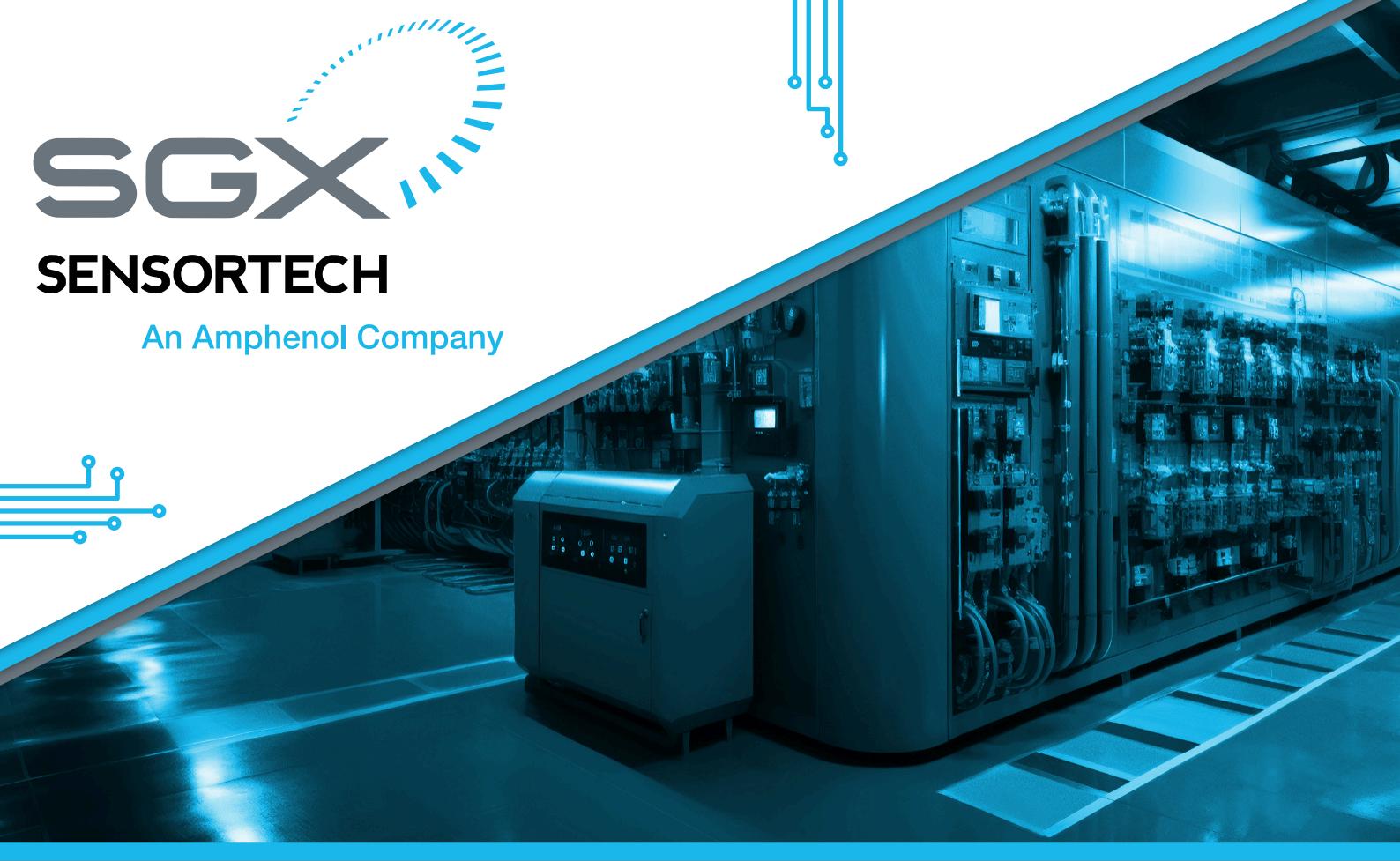




**SENSORTECH**

An Amphenol Company



**BLD1/2-I2C-Compact**

# Hydrogen + Carbon Monoxide<sup>1</sup> Detection Sensor Datasheet

<sup>1</sup> in BLD2-I2C-Compact version

**BLD2-I2C-Compact** is a sensor solution for energy storage and fire protection systems, designed to ensure maximum safety and operational integrity. This sensor detects hydrogen, carbon monoxide<sup>1</sup>, temperature, and humidity changes when battery leakage or other failure modes occur, making it an essential component for industrial environments where safety is paramount.

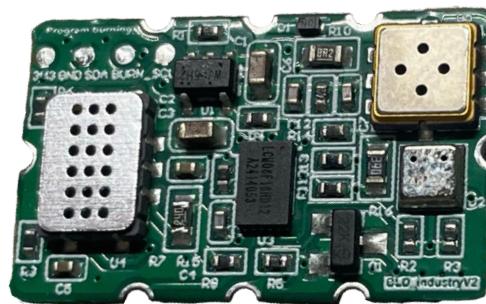


*Quality, Safety, Responsibility*

# Functional specifications

## Features

- Small size
- Fast response time (< 1s)
- MEMS sensor technology for Hydrogen
- High sensitivities to gases Hydrogen
- CO Detection (in BLD2-I2C-Compact version)
- PCBA that can be soldered



## Principle

This smart sensor integrates with your Battery Management System (BMS) to provide continuous monitoring and early detection of dangerous conditions, such as overheating events. By sending an early warning signal, the BLD2-I2C-Compact enables operators to take swift, preventive action, helping to reduce the risk of fires and equipment damage.

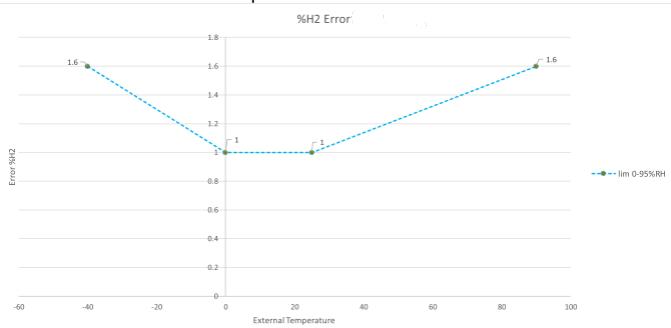
Unlike in vehicle applications, where evacuation may be required, the BLD2-I2C-Compact is specifically tailored for industrial use, where the focus is on fire prevention and protection. When a potential battery failure is detected, the recommended response is to initiate fire-fighting measures, ensuring personnel and facility safety.

## Main technical characteristics

Temperature and humidity range	0~95% RH -40°C to +85°C
Temperature storage	-40°C to 120°C
PCB Connection	PCB Soldered
External dimensions	22.86 mm x 13.97mm x 2.5mm
Weight	< 2 g
Power supply	4.5V ~ 5.5V
Power consumption	25~50 mA
Output signal	Corresponding to 0-20% Hydrogen Can detect CO <sup>1</sup>
H <sub>2</sub> detection	0 - 4 % (guaranteed)
H <sub>2</sub> accuracy	1.0 - 1.6% (in accordance with the table below <sup>2</sup> )
On board temperature	Range: -40/+85°C Resolution: 1°C Accuracy: ±2%(MAX)
On board humidity	Range: 0 to 100% Resolution: 0.0019% Accuracy: ± 3% RH (max), 0-80% RH
Start-up time	< 4s

<sup>1</sup> in BLD2-I2C-Compact version

<sup>2</sup> Under 500mL/s airflow and stable condition point

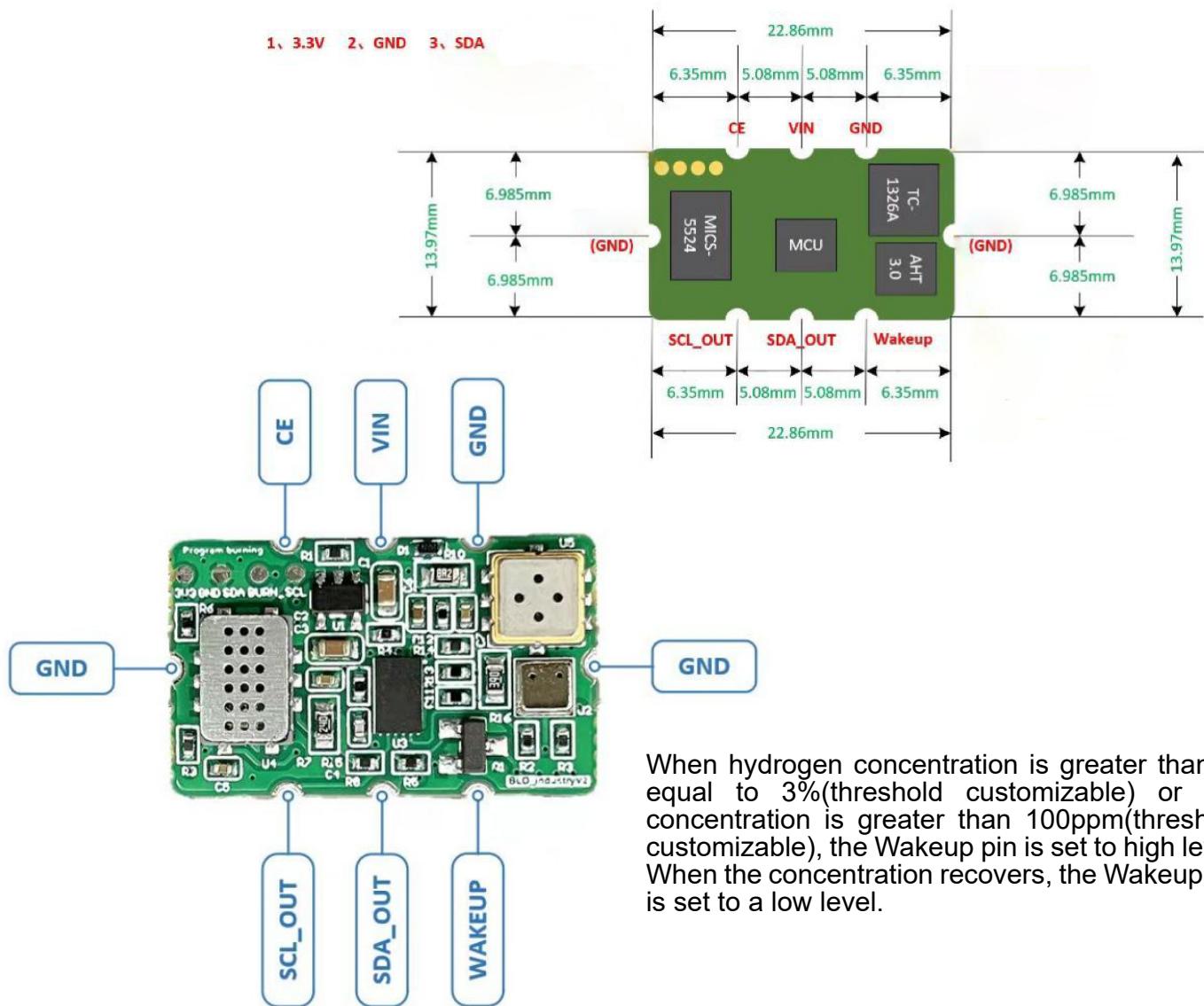


**BLD1 / 2-I2C-Compact**

# Interface and integration

## Principle

Soldering is done by the 5 fixation point.



When hydrogen concentration is greater than or equal to 3%(threshold customizable) or CO concentration is greater than 100ppm(threshold customizable), the Wakeup pin is set to high level. When the concentration recovers, the Wakeup pin is set to a low level.

## Recommendation for integration

The sensor must be exposed to measure the air from the **battery pack only**.

## Variations of this sensor

	BLD1-I2C-Compact	BLD2-I2C-Compact
H2	yes	yes
CO	<u>no</u>	<u>yes</u>
Temperature	yes	yes
Humility	yes	yes

I2C address : 0x05				
	Define:	OFFSET	unit	Initial Value
byte0	temperature H			
byte1	temperature L		°C	-100
byte2	H2 value H			
byte3	H2 value L	0	1/10000	0
byte4	Humility H			
byte5	Humility L	0	%	0
byte6	CO_value	0	0 ->250	0
byte7	output status 1			
byte8	output status 2			
byte9	CRC			
byte10	debug information 1 H			
byte11	debug information 1 L			
byte12	debug information 1 H			
byte13	debug information 1 L			

During the warm-up period, frames containing all 0x00 will be sent. Please filter out frames where all data is 0x00 and CRC also 0x00

		Occupied bit	VALUE0	VALUE1	VALUE2	VALUE3
Status1	H2>3%Thermal runaway	1	normal	Thermal runaway		
	CO>100ppm Thermal runaway earlywarning	1	normal	Thermal runaway earlywarning		
	reserve	2				
	Roll counter	4	0-15, cycle			
Status2	Voltage alarm (not available in this product)	2	normal	Low voltage alarm	High voltage alarm	reserve
	H2>10%,Exceeds the exact range	1	normal	transfinite		
	Temperature and humidity sensor status	1	normal	damage (AHT30 status is not 0x18)		
	TC chip problem	2	normal	Short circuit	Short circuit	reserve
	CO sensor chip is faulty	2	normal	Short circuit	Open circuit	reserve

## Important Notes

1. In our communication module, we use the standard I2C transmission rate of 100 kb/s. Our solution does not support High-Speed I2C mode, so please avoid using it. Using the high-speed mode may result in significant frame loss during communication.
2. If you plan to use three-proof paint or other odorous components, make sure to allow them to fully cure before use. This will prevent the emitted odor from interfering with CO detection.

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SGX Europe Sp. z o.o. sensors are designed to operate in a wide range of harsh environments and conditions. However, it is important that exposure to high concentrations of solvent vapours is to be avoided, both during storage, fitting into instruments and operation. When using sensors on printed circuit boards (PCBs), degreasing agents should be used prior to the sensor being fitted. SGX Europe Sp. z o.o. makes every effort to ensure the reliability of its products. Where life safety is a performance requirement of the product, we recommend that all sensors and instruments using these sensors are checked for response to gas before use.

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